



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/522,613 | 01/31/2005 | Takao Omae | 052070 | 6664 |
| 38834 | 7590 | 09/13/2007 | | |
| WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP | | | EXAMINER | |
| 1250 CONNECTICUT AVENUE, NW | | | CAVALLARI, DANIEL J | |
| SUITE 700 | | | ART UNIT | PAPER NUMBER |
| WASHINGTON, DC 20036 | | | 2836 | |
| | | MAIL DATE | DELIVERY MODE | |
| | | 09/13/2007 | PAPER | |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

31

| | | | |
|------------------------------|--|-------------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/522,613 | OMAE ET AL. | |
| | Examiner Daniel J. Cavallari | Art Unit 2836 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 31 January 2005.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-14 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-3,6 and 9-14 is/are rejected.
- 7) Claim(s) 4,5,7 and 8 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 31 January 2005 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>5/13/05, 1/31/05</u> . | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Information Disclosure Statement

The information disclosure statements (IDS) submitted on 5/13/2005 and 1/31/2005 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements are being considered by the examiner.

Abstract

The abstract of the disclosure is objected to because it exceeds 150 words in length. Correction is required. See MPEP § 608.01(b).

Claim Objections

Claims 1, 2, 3, 6, & 13 are objected to because of the following informalities:
In regard to Claims 1 & 13

- The term "standby" does not require the extra symbol between "stand" and "by" as currently presented in Claim 1 and should be spelt correctly as "standby".

In regard to Claim 2, 3, & 6

- The claim recites "a first switch means for detecting voltage" which is confusing as a "switch means" would appear to mean to one of ordinary skill a means for switch and NOT a means for "detecting voltage" as claimed. The claim will be examined as best understood wherein the "switch means" is read on by a voltage

detector, as presumed by the functional limitation provided with the means of "for detecting voltage".

In regard to Claim 2

- There is a lack of antecedent basis for "the relevant backup power source" as a "relevant backup power source" has not been previously disclosed however a "backup power source" has been disclosed and therefore the claim will be examined as such.

In regard to Claim 6

- The claim contains grammatical errors. The sentences "for start to the thermal battery" and "for start is supply" are grammatically incorrect.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 7, 8 & 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In regard to Claims 7 & 8

The claims state a "condenser" and although the specification also uses this term, the Examiner points out that the functionality and drawings (See ref# 15, Figure 6) appear to be referring to what is ordinarily referred to in the art as a "capacitor" and that the use of the term "condenser" is not appropriate if this component is in fact a capacitor. The claim will be examined as best understood wherein "condenser" is taken to mean a "capacitor".

In regard to Claim 9

The claim contains numerous grammatical errors making the claim as a whole confusing and cumbersome to read and comprehend. The applicant is advised to fix the grammatical errors contained throughout the claim. In particular, but NOT limited to "for limiting value of ignition" and "with value of reference electric current".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

- (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 1 is rejected under 35 U.S.C. 102(b) as being unpatentable over Aronne (US 5,525,847)

A power unit comprising:

- A main power source (38) and a standby power source (18), wherein a thermal battery is provided as the standby power source (18) (See Figure 1).

Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Johansson (US 2002/0017098).

A power unit comprising:

- A main power source (12, See Figure 1) and a standby power source, wherein a thermal battery is provided as the standby power source (See Paragraph 14).

Claim 1, 14/1, 2, 14/2, 6, 14/6, 12, 14/12, 13, & 14/13 are rejected under 35 U.S.C. 102(a) as being anticipated by Kato (US 2001/0027268 A1).

In regard to Claim 1

A power unit comprising:

- A main power source (6, See Figure 1) and a standby power source (46), wherein a thermal battery is provided as the standby power source (See Paragraph 49).

In regard to Claim 14/1

- A conveyance comprising an electronic control system (35) and the power unit for conveyances (See arguments of Claim 1) which is constituted so that electric power for operating the electronic control system (35) is supplied from the power unit for conveyance to the electronic control system (35) (See figure 1).

In regard to Claim 2

- A first switch means for detecting voltage (45, Figure 1) of the main power source (6) to conduct a switch operation (via 52)
- An activation device (47) for having continuity with the main power source when the relevant first switch means operates, to activate the thermal battery.
- A backup power source (read on by the AC input connected to 42, See Figure 1) parallelly connected to the main power source through a diode
- A second switch means (51) located between the relevant backup power source and the activation device, for switching connection status between the backup power source and the activation device.

In regard to Claim 14/2

- See arguments for Claims 2 & 1/14 above.

In regard to Claim 6

- A main power source abnormality detection means (45) for detecting abnormality of the main power source (6) (See Column 5, Lines 19-30)
- An auxiliary power source means (AC input, See Figure 1) which is a power source means for supplying electric power for start to the thermal battery (via timer 47), different from a battery located in the main power source.
- A control means for controlling so that electric power for starting is supplied from the auxiliary power source means to the thermal battery in case the main power source abnormality detection means detects abnormality of the main power source (See Figure 1).

In regard to Claim 14/6

- See arguments for Claim 6 and Claim 1/14 above.

In regard to Claim 12

- A main power source abnormality detection means (41) for detecting abnormality of the main power source and a sub power source means (read on by timer 47, See Figure 1) for supplying power to outside (the outside being read on by the power output of the battery 46) after abnormality is detected by the relevant main power source abnormality detection means.

In regard to Claim 14/12

- See arguments for Claim 12 and Claim 1/14 above.

In regard to Claim 13

- A main power source abnormality detection means (41, Figure 1) for detecting abnormality of the main power source.
- A standby power source (AC power connected to 42, See Figure 1) which is provided with a thermal battery (46) for supplying power to outside (read on by the output to 35) when the main power source abnormality detection means detects power supply abnormality
- A standby power source abnormality detection means (41) for detecting power supply abnormality in the relevant standby power source.
- A warning means (4 & 3c) for giving warning when abnormality in the standby power source is detected by the standby power source abnormality detection means at least either before or after the relevant conveyance starts.

In regard to Claim 14/13

- See arguments for Claim 13 and Claim 1/14 above.

Claims 1, 3, & 14/13 are rejected under 35 U.S.C. 102(a) as being anticipated by Iverson et al. (US 6,828,755)

In regard to Claim 1

A power unit comprising:

- A main power source (36) and a standby power source (38), wherein a thermal battery is provided as the standby power source (38).

In regard to Claim 3

- A first switch means (102) for detecting voltage of the main power source (36) to conduct a switch operation (read on by connecting either 116 or 40 to the main power source, See Column 5, Lines 37-67)
- A constant current circuit (40) to which power is supplied from the main power source by a switch operation of the relevant switch, for supplying constant current to the thermal battery (38) (See Column 5, Lines 37-67).
- An energy storage means (114) for supplying backup power to the constant current circuit (40) when power from the main power source is shut off (low) (See Column 5, Lines 37-67).

In regard to Claim 14/3

- A conveyance comprising an electronic control system (104) and the power unit for conveyances which is constituted so that electric power for operating the electronic control system (104) is supplied from the power unit for conveyance to the electronic control system (See figure 4B).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9, 14/9, 10, 14/10, 11, & 14/11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aronne (US 5,525,847) in view of Sullivan (US 6,220,165).

In regard to Claims 9 & 10

Aronne fails to explicitly teach a circuit for limiting ignition electric current but does teach an igniter for starting the thermal battery (See Figure 2). The Examiner further notes that a bridge wire is used (58) and is controlled by the ignition switches (14 & 19) (See Figure 1), however no limiting current circuit is explicitly taught.

Sullivan teaches a limiting ignition electric current circuit used with thermal batteries (See Column 1, Lines 56-63). The Examiner further notes that the limiting circuit of Sullivan is meant to control a bridgewire.

Sullivan teaches:

In regard to Claim 9

A circuit for limiting ignition electric current carried to a thermal battery activation circuit for activating the thermal battery is provided; the circuit for limiting ignition electric current comprising:

Art Unit: 2836

- A semiconductor integrated circuit See Figure 1 & Column 3, Lines 58-67) in which a thermal battery activation circuit ignition drive circuit is formed.
- A reference power supply formed in the semiconductor integrated circuit (read on by the INPUT).
- A pull down resistor (24) connected to the outside of the semiconductor integrated circuit (the Examiner notes that the resistor is part of the circuit and therefore connected to the "outside" of the circuit by the rest of the circuit) to which electric current is supplied from the reference power supply
- An electric current limitation circuit (22) formed inside the semiconductor integrated circuit, for limiting value of ignition electric current carried to the thermal battery activation circuit within a predetermined range, with value of reference electric current supplied from the reference power supply to the pull-down resistor as reference (See Column 3, Line 59 to Column 4, Line 29).

In regard to Claim 10

The power unit for conveyance as set forth in claim 1, wherein a circuit for limiting ignition electric current carried to a thermal battery activation circuit for activating the thermal battery is provided (See figure 1), and a thermal battery activation circuit ignition drive circuit (See Figure 3), an electric current detection resistor (60, Figure 3) through which thermal battery activation circuit ignition electric current flows, a constant current source (56, read on the switch when it is on), a pull-down resistor (64) through which electric current from the constant current source flows; an electric current

limitation circuit (54) for limiting ignition electric current value detected based on potential difference between both ends of the electric current detection resistor within a predetermined range based on potential difference between both ends of the pull-down resistor, are further provided in the same semiconductor integrated circuit.

In regard to Claim 11

The power unit for conveyance as set forth in claim 1, wherein a circuit for limiting ignition electric current carried to a thermal battery activation circuit for activating the thermal battery is provided (See Figure 1), and a semiconductor integrated circuit in which a thermal battery activation circuit ignition drive circuit is formed.

The Examiner notes that Aronne teaches a "time limitation means" (read on by initiation switches (14 & 19) (See Figure 1) connected to outside of the semiconductor integrated circuit, for limiting current carrying time of ignition electric current to a predetermined time [The Examiner notes that the time limitation means of the initiation switches limit the current carrying time of ignition to the predetermined time of only after being initiated].

Reasoning of combination for Claims 9, 10, & 11

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the limiting ignition electric current circuit taught by Sullivan with the backup power supply system taught by Aronne. The motivation would have

been to prevent erroneous ignition of the thermal battery by proving the limiting ignition electric current circuit of Sullivan (See Column 1, Lines 39-63).

In regard to Claim 14/9, 14/10, & 14/11

- A conveyance comprising an electronic control system (12) and the power unit for conveyances (See arguments of Claim 9) which is constituted so that electric power for operating the electronic control system (12) is supplied from the power unit for conveyance to the electronic control system (12) (See figure 1 & Column 3, Lines 16-47).

Allowable Subject Matter

Claims 4, 5, 7, 8, 14/4, 14/5, 14/7, & 14/8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and after overcoming any objection or 112 rejection presented at the beginning of this office action. The Examiner notes that claim 14 would be allowable if it included all the limitations of the intervening claims of 4, 5, 7, or 8 as stated above.

The following is a statement of reasons for the indication of allowable subject matter:

In regard to Claim 4

Prior art teaches thermal battery backup power supply systems, for example as taught in Aronne, as well as thermal battery ignition circuitry, as taught by Sullivan. Prior art further teaches switching between power sources by measuring the voltage of the power supply sources, as taught by Kato. Prior art fails to teach a thermal battery ignition control circuit connected to the power supply wire between the main power source and the voltage conversion circuit, which operates by electric power from the relevant power supply wire, for controlling the thermal battery ignition circuit in response to voltage decrease of the main power source to activate the thermal battery during operation, and a diagnosis circuit connected to the power supply wire between the main power source and the voltage conversion circuit which operates by electric power from the relevant power supply wire. Therefore, Claim 4 which has these limitations and claim 4/14, 5, and 5/15 which are dependant on Claim 4 would be allowed.

In regard to Claims 7 & 8

The Examiner notes that Claim 7 would need to be re-written to overcome the 112 issue stated at the beginning of the office action.

Prior art teaches thermal battery backup power supply systems, for example as taught in Aronne, as well as thermal battery ignition circuitry, as taught by Sullivan. Prior art further teaches switching between power sources by measuring the voltage of the power supply sources, as taught by Kato. Prior art fails to teach wherein a thermal

Art Unit: 2836

battery activation circuits terminals are connected to the positive electrode of the main storage battery through a voltage sensor for detecting voltage decrease of the power source and thereby closing (the activation circuit) electrically and the other terminal connected to the negative electrode of the second capacitor and a main switch for grounding the positive electrode of the second capacitor when closing and a control unit for closing the main switch by detecting voltage decrease of the main power source (and thereby starting the thermal battery).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Cavallari whose telephone number is (571)272-8541. The examiner can normally be reached on Monday-Friday 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on (571)272-2800 x36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2836

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Daniel Cavallari
August 28, 2007



MICHAEL SHERRY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800